

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

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Aerospace Medicine

***DRINKING WATER SURVEILLANCE
PROGRAM***



COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This Air Force Instruction (AFI) provides guidance for managing the Air Force (AF) drinking water (DW) surveillance program. Its use is required at garrison and deployed locations worldwide, in accordance with (IAW) Department of Defense Instruction (DODI) 4715.5, the Code of Federal Regulations (CFR), applicable state and local regulations, the Overseas Environmental Baseline Guidance Document (OEBGD), and applicable Department of Defense Final Governing Standards (FGS). At installations outside the United States and its territories, i.e. overseas, AF-unique criteria listed in this instruction and not included in the OEBGD or applicable FGS should be followed when feasible. Installations in the United States and its territories are required to comply with the most stringent applicable standards (AF, Federal, State or Local).

This instruction applies to AF, Air National Guard and AF Reserve installations. Major Commands (MAJCOM) may issue supplementary criteria that are more protective of human health than that specified in this instruction provided they obtain the concurrence of the DoD Executive Agent (or equivalent authority), consider the impact upon host nation relations with other DoD components, and clearly identify variances. This publication implements Environmental Protection Agency (EPA) regulations promulgated under the authority of the Safe Drinking Water Act (SDWA) and AFD 48-1, *Aerospace Medicine Program*. AFD 48-1 directly supports AFD 90-8, *Environment, Safety, and Occupational Health*.

SUMMARY OF CHANGES

This AFI has been significantly revised incorporating major changes that clarify roles and responsibilities, expand applicability to deployed operations, transfer procedural information to the DW Surveillance Technical Guide and add specific survey requirements.

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Chapter 1

RESPONSIBILITIES

1.1. The Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health (SAF/IEE).

- 1.1.1. Develops overarching DW program policy for Secretary of the Air Force approval.
- 1.1.2. Acts as liaison for AF DW issues to Office of the Secretary of Defense, the Congress and other Federal organizations.
- 1.1.3. Provides strategic direction, oversight and guidance for the AF DW Program.

1.2. The Air Force Surgeon General (HQ USAF/SG).

- 1.2.1. USAF/SG is the Office of Primary Responsibility for providing health oversight, hereby referred to as DW surveillance, of AF DW systems. Ensures AF DW systems are properly surveyed, sampled, analyzed and monitored to provide adequate supplies of safe DW to AF personnel at garrison and deployed locations.
- 1.2.2. Establishes resources and implementation instructions for DW Surveillance Program and regulatory compliance to protect public health. Coordinates with AF/A7C on these matters.

1.3. The Air Force Medical Support Agency (HQ AFMSA).

- 1.3.1. Develops AF implementation instructions for DW surveillance and establishes AF DW requirements to protect the health of AF personnel.
- 1.3.2. Establishes a planning, programming and budgeting mechanism to advocate for and distribute Defense Health Program (DHP) funds to conduct DW surveillance. Validates Major Command (MAJCOM) SG budget submittals for conducting the DW surveillance program and oversees budgeting, programming and execution of DW surveillance programs throughout the AF.
- 1.3.3. Serves as the Chair of the DoD SDWA Services Steering Committee (SSC) on behalf of SAF/IEE.
- 1.3.4. Provides SDWA oversight for DW surveillance to include analysis of present and proposed federal legislation associated with SDWA surveillance and analyzes open enforcement actions associated with SDWA surveillance for negative trends. In coordination with AF/A7C, notifies AF ESOH Council, SAF/IEE, AFLOA/JACE, MAJCOM BEEs and installation BE offices with results of these analyses. Will conduct these same functions on OEBGD and FGS standards in overseas/deployed locations.

1.4. The United States Air Force School of Aerospace Medicine (USAFSAM/OE and Detachment 3, USAFSAM).

- 1.4.1. Provides technical consultations regarding drinking water quality surveys, monitoring, and compliance. Annually reviews and updates, as necessary, technical guidance documents to assist installations in interpreting and executing DW surveillance programs.

1.4.2. Provides specialized field surveys and studies and/or technical assistance to installations with DW quality issues.

1.4.3. Offers in-house and contract laboratory analytical services to installations.

1.4.4. Ensures analyses are performed by a laboratory that is certified by the appropriate authority for the installation submitting the sample, and reports results IAW appropriate requirements.

1.4.5. Upon request by an installation, reviews commercial (CONUS, OCONUS, Expeditionary) laboratory quality assurance and quality control programs.

1.4.6. Provides guidance to installations on collection and preservation of DW samples, sampling equipment, instruments, methods, calibration, and interpretation of results concerning DW.

1.4.7. Develops and teaches curriculum on technical aspects of DW systems, DW science, requirements of the SDWA and this instruction to Bioenvironmental Engineers (BEE) and Bioenvironmental Engineering (BE) technicians.

1.4.8. Publishes and updates a DW Surveillance Technical Guide. The purpose of this guide is to provide specific technical information to assist BE personnel in ensuring all personnel have safe DW. Thus, the technical guide directly complements this instruction.

1.5. The Air Force Civil Engineer (HQ USAF/A7C).

1.5.1. Ensures AF DW systems are properly designed, constructed, operated and maintained to provide adequate supplies of potable DW to AF personnel and ensures compliance with applicable regulatory requirements or standards associated with infrastructure and operations.

1.5.2. Directs a sustainable asset management approach for investment planning in support of DW requirements. Establishes an Activity Management Plan process and associated common level standards ensuring desired outcomes in support of mission achievement. Operations and infrastructure requirements shall be planned, programmed and budgeted consistent with the most efficient lifecycle cost.

1.6. The Air Force Civil Engineer Support Agency (HQ AFCESA).

1.6.1. Issues DW system design and operations & maintenance guidance; provides technical assistance to MAJCOMs and installations.

1.6.2. Provides a contracting mechanism for engineering studies, water distribution and treatment system design, and Operations, Maintenance, and Training Assistance Programs (OMTAP).

1.6.3. Manages housing and installation utilities privatization contracts.

1.7. The Air Force Center for Engineering and the Environment (HQ AFCEE).

1.7.1. Assists MAJCOMs and installations in resolving regulatory issues. Coordinates with MAJCOM prior to base visits and provides summary of activities to parent MAJCOM following visits.

1.7.2. Provides AF representation to Federal, state and local regulators. Where appropriate and in consultation with the installation and MAJCOM, the Regional Environmental Office (AFCEE/RO) may represent an installation to Federal, state and local regulators.

1.7.3. Working through the SDWA Services Steering Committee, provides AF comments on proposed federal and regional EPA regulations. AFCEE/ROs comment on state and local drinking water regulations impacting AF operations.

1.7.4. Maintains AF database of all environmental regulatory Open Enforcement Actions (OEAs) and their status. Confirms OEA closure with appropriate regulators upon completion of required corrective actions and training.

1.7.5. In close cooperation with HQ AFCEA, provides water system privatization technical guidance to AF installations, MAJCOMs and HQ AF, upon request.

1.8. Major Commands (MAJCOMs).

1.8.1. MAJCOM Bioenvironmental Engineer

1.8.1.1. Supports installations to ensure the DW surveillance program conforms to this instruction.

1.8.1.2. Reviews and validates installation programming and budget needs for conducting the DW surveillance program.

1.8.1.3. Conducts periodic audits of installation DW surveillance program IAW appropriate authority while ensuring regulatory compliance and adequate resourcing. Periodicity of audits should be determined by the MAJCOM BEE, and should be based upon installation-specific performance, historic enforcement actions, inspection results and execution of new DW requirements.

1.8.1.4. Serves as the MAJCOM POC with primacy in overseas/deployed locations where higher regulatory authority is not present. Fulfills the role of "appropriate DoD medical authority" as specified in the Overseas Environmental Baseline Guidance Document (OEBGD) and/or country-specific final governing standards (FGS).

1.8.1.5. Serves as the OPR for USAF medical coordination on country-specific environmental governing standards for drinking water in overseas/deployed locations.

1.8.2. MAJCOM Civil Engineer.

1.8.2.1. Implements a sustainable asset management approach and activity management plans for installations to ensure DW systems are properly designed, constructed, operated, and maintained in order to provide adequate supplies of safe DW to base personnel while ensuring compliance with applicable regulatory requirements or standards. Assists installations in resolving regulatory issues with technical expertise from AFCEE and respective AFCEE/RO.

1.8.2.2. Ensures installations use the established planning, programming and budgeting mechanism to secure funds to execute DW projects to support system design, operations and infrastructure and sustainment, restoration and modernization.

1.8.2.3. Validates installation Civil Engineering (CE) programming and budget submittals and transmits to HQ USAF/A7C.

1.9. Installations.

1.9.1. The Installation Commander

1.9.1.1. Oversees implementation of the installation DW program. The DW program is implemented by installation agencies (BE, CE, Environmental Management, Judge Advocate, and Public Affairs) in coordination with MAJCOMs, Combatant Commands, Joint Service, federal, state, and local agencies, public and private purveyors of water, and the surrounding community.

1.9.1.2. Establishes an Installation DW Working Group which meets to address all local DW issues involving compliance, risk reduction and continuous improvement. The DW Working Group will establish procedures for interfacing with regulators on matters such as enforcement actions, reporting of compliance/non-compliance, and any other local DW concerns that may arise. It is highly encouraged to appoint a single agency (i.e. CE or BE) to interface with regulators. This workgroup will operate under the auspices of the Installation ESOH Council per guidance in AFI 90-801, *Environment, Safety, and Occupational Health Councils*.

1.9.2. Bioenvironmental Engineering.

1.9.2.1. Performs DW surveillance associated with the protection of public health.

1.9.2.2. Ensures sanitary surveys are performed to satisfy the requirements of applicable regulations and standards and recommends mitigation actions by appropriate CE or SG organizations to maintain the sanitary quality of the base DW system. Ensures special surveys of the DW system address potability and sanitary conditions affecting the installation DW system. For detailed sanitary survey instructions, refer to the DW Surveillance Technical Guide.

1.9.2.3. Ensures water vulnerability assessments are completed IAW AFI 10-246, *Food and Water Protection Program*.

1.9.2.4. Monitors, approves and samples aircraft watering points as described in the DW Surveillance Technical Guide.

1.9.2.5. Ensures laboratories perform analyses using required analytical methods for which they are certified. Interprets results of water analyses and provides results to the appropriate CE, SG and regulatory authorities according to applicable regulations. Interacts with regulator on DW compliance issues pertaining to sampling. Note: substantive interactions with federal, state or local compliance offices should be coordinated with the Installation DW Working Group.

1.9.2.6. Immediately implements the public notification procedures described by the primacy agency when DW analysis results indicate a potential public health threat or result in non-compliance with applicable regulations and standards. Assists the Public Affairs Office in the preparation of Public Notifications, and BE will be responsible for associated costs. BE will also notify CE and MAJCOM BEE.

1.9.2.7. If appropriate, initiates requests for waivers, exemptions and reduced sampling, analysis, and monitoring (SAM) rates. Note: Substantive interactions with federal, state or local compliance offices should be coordinated with the Installation DW Working Group.

1.9.2.8. Prepares, coordinates and distributes Consumer Confidence Reports as necessary to comply with applicable regulatory requirements and this instruction.

1.9.2.9. Supports CE by conducting technical reviews of repairs, renovations and modifications to DW systems to assess and avert potential health hazards.

1.9.2.10. Supports the cross-connection control and backflow prevention program by providing technical assistance and assigning the correct hazard classification to each cross-connection using the most recent Uniform Plumbing Code criteria and AFI 32-1066, *Backflow Prevention Program*. Forwards recommendations to the Backflow Prevention Manager (BPM).

1.9.2.11. Advises commanders on source water protection opportunities, physical modifications to enhance water treatment and distribution systems, and alternative management practices to meet compliance requirements and enhance water quality.

1.9.2.12. Coordinates with CE to ensure DW systems are properly classified per guidance in the DW Surveillance Technical Guide.

1.9.2.13. Reviews the CE distribution system flushing and maintenance program to ensure appropriate sampling locations and timing with CE distribution system maintenance activities, including hydrant maintenance and testing.

1.9.2.14. Completes annual and long-range budget plans to support routine DW monitoring and analytical requirements associated with the health of the population served, NPDWR and state equivalents if applicable; including equipment, supplies, training and analytical costs. This budget shall include resources for the SAM plan requirements in Chapter 4 of this instruction. Any additional sampling required to comply with DW regulations due to design deficiency, inadequate system maintenance, or aged infrastructure will be performed and funded by the system operator.

1.9.2.15. Maintains DW survey and analytical data records in the Defense Occupational and Environmental Health Readiness System (DOEHRS). Provides data and technical support to physicians and public health personnel investigating potential DW-related illnesses. Shares data with principal stakeholders (e.g. CE, JA, PA) as necessary to ensure full operational compliance of the drinking water system and regulatory compliance tracking/reporting.

1.9.2.16. Advises CE on potential health hazard impacts of any water distribution system deficiencies or unusual events that could result in changes to water quality and potability including line breaks, distribution system maintenance (e.g., cleaning of reservoirs, storage tanks, hydrant flushing, etc.), new connections, water treatment plant repairs, cross-connections and disinfectant and fluoride application problems. Coordinates with CE until the distribution system deficiencies are corrected. BE actions for the activities listed above can be found in the DW Surveillance Technical Guide.

1.9.2.17. Develops a DW SAM plan that includes the contents described in Chapter 4 of this instruction and applicable primacy agency guidance.

1.9.3. Base Civil Engineer (BCE)

1.9.3.1. Designs, constructs, operates and maintains DW systems. Coordinates all modifications and repairs to the DW system with the installation BEE, and also with

appropriate regulatory authority as required. New or repaired potable water systems shall be disinfected IAW requirements established by the agency with regulatory primacy. In cases where primacy agency requirements are not prescribed, Civil Engineering and Simplified Acquisition of Base Engineering Requirement (SABER), privatized utility system, and Indefinite Delivery/Indefinite Quantity (ID/IQ) contractors must follow potable water system disinfection requirements per most current industry standards.

1.9.3.2. Develops and maintains an adequate supply of DW for the base populace and protects supplies from unintentional contamination. Develops and implements applicable Wellhead Protection Plan, Water Master Plan, and an Emergency Operations or Contingency Response Plan (CRP) in coordination with BE using guidance in DoD Model Wellhead Protection Plan or other local requirements.

1.9.3.3. Conducts DW treatment, storage and distribution process control monitoring and records DW production rates, periodic disinfectant residual, fluoride (if applied), and pH measurements if required. Ensures required fluoride levels (if applied) and a detectable disinfectant residual level, or higher level if required by regulatory authority, is maintained in all parts of the installation DW distribution system. Is OPR for system specific additional sampling to ensure optimum system operations.

1.9.3.4. Conducts DW program operational sampling associated with water purchase, production, treatment, storage, distribution and maintenance activities.

1.9.3.5. Conducts a cross-connection control and backflow prevention program to identify, isolate, and correct cross-connections and other potential sources of contamination to the water supply system IAW AFI 32-1066 and requirements established by the agency with regulatory primacy. Organizations that utilize private facility maintenance O&M contractors must also comply with cross-connection control and backflow prevention primacy regulations.

1.9.3.6. Corrects distribution system deficiencies identified through internal assessment, monitoring, engineering and hydraulic studies, or inspection by BE or regulatory agencies, and keeps records of corrective actions.

1.9.3.7. Notifies BE of any unusual events affecting the water distribution system that could result in changes to water quality and potability including line breaks, new connections, distribution system maintenance (e.g., cleaning of reservoirs, storage tanks, hydrant flushing, etc.), cross-connections, water treatment plant repairs, and chlorine and fluoride application problems. Systems meeting any of the above criteria will not be placed back into service until BE has approved. Organizational facility maintenance O&M and UP contractors must also comply with this requirement.

1.9.3.8. Coordinates CRP and base recovery actions pertaining to DW systems with BE using appropriate CE resources.

1.9.3.9. Works with BE in developing and maintaining a SAM plan.

1.9.3.10. Develops a system flushing and maintenance program IAW UFC 3-230-02, *Operations & Maintenance of Water Supply Systems*.

1.9.3.11. Adheres to guidance in AFI 32-1067, *Water Systems*, AFI 32-7041, *Water Quality Compliance*, AFI 32-1066 and other pertinent CE regulations pertaining to DW monitoring, storage, and distribution.

1.9.3.12. CE shall train and provide funding for a "Certified Operator". This person has responsibility for the operation of any water facility and is certified IAW the requirements established by the agency with regulatory primacy.

1.9.3.13. CE shall pay for all drinking water system permit fees and service fees IAW primacy requirements.

1.9.4. The Public Affairs Office develops (with the assistance of the BEE and the BCE) and disseminates Public Notices required by the NPDWRs (or equivalent overseas). Assists in the dissemination of the Consumer Confidence Report (or equivalent). BE can provide information from the DW Surveillance Technical Guide for general guidance on complying with public notification requirements. Installation personnel must notify their MAJCOM counterparts about public release of the information.

1.9.5. The Staff Judge Advocate provides legal consultation on the SDWA regulatory requirements applicable to the AF.

Chapter 2

DW SURVEYS

2.1. Survey Requirements.

2.1.1. The BEE will perform an installation DW system survey annually or at a frequency determined by the Combatant Command at deployed sites that examine and evaluate the adequacy of specific critical elements associated with water systems: 1) Water Source; 2) Treatment; 3) Distribution; and 4) Finished Water Storage. The survey can be accomplished using information provided by the most current primacy agency sanitary survey and local municipal water supply, inter-service publication AFMAN 48-138_IP (TBMED 577), *Sanitary Control and Surveillance of Field Water Supplies*, and the DW Surveillance Technical Guide.

2.1.2. Survey information shall be entered in the appropriate DW survey module(s) in DOEHS. **Note: Do not enter system vulnerabilities into DOEHS.** Deficiencies found during the surveys requiring infrastructure repair, redesign or construction will be formally reported to the BCE with recommendations for corrective actions to be taken. Annual surveys will describe steps taken to resolve deficiencies identified in previous surveys.

2.2. Water Source Survey.

2.2.1. Installations receive DW from municipal systems, wells and approved water sources. The BEE will document source name, and will evaluate potential sources of contamination and/or threats surrounding the source.

2.2.2. Surveys will be documented in the DOEHS Municipal Water System survey and/or the Raw Water Source survey as appropriate.

2.3. Treatment System Survey.

2.3.1. BE personnel shall conduct treatment system surveys that provide subject matter expertise to CE regarding health outcomes associated with existing, new or proposed water system treatment processes. Surveys will be documented in the DOEHS Treatment System survey as appropriate.

2.3.2. BE shall adjust surveillance plans when necessary to account for potential treatment processes affecting the water distribution system that could result in changes to water quality and potability. For detailed information on treatment processes and associated health outcomes, refer to the DW Surveillance Technical Guide and applicable state/local requirements. BE will assess health risks of any significant changes in water quality as a result of water treatment changes/modifications/repairs and shall report findings to the BCE and Medical Group Commander. BE will work with CE and JA to determine whether primacy agency notification is necessary. Note: Substantive interactions with federal, state or local compliance offices should be coordinated with the Installation DW Working Group.

2.4. Distribution System Survey.

2.4.1. BE personnel shall conduct distribution system surveys to provide subject matter expertise to CE regarding health outcomes associated with existing, new or proposed water

system distribution processes. Surveys will be documented in the DOEHRS Distribution System survey as appropriate.

2.4.2. BE shall adjust surveillance plans when necessary to account for potential distribution activities affecting the water system that could result in changes to water quality and potability. BE will assess health risks of any significant changes in water quality as a result of water distribution and shall report findings to the BCE and Medical Group Commander. BE will work with CE and JA to determine whether primacy agency notification is necessary. Note: substantive interactions with federal, state or local compliance offices should be coordinated with the Installation DW Working Group. For detailed information on water distribution and health outcomes, refer to the DW Surveillance Technical Guide.

2.5. Water Storage Survey.

2.5.1. BE personnel shall conduct storage system surveys that provide subject matter expertise to CE regarding health outcomes associated with existing, new or proposed water storage processes. Surveys will be documented in the DOEHRS Storage System survey(s) as appropriate.

2.5.2. BE shall adjust surveillance plans when necessary to account for potential water storage processes affecting the water system that could potentially result in changes to water quality and potability. BE will assess health risks of any significant changes in water quality as a result of water storage and shall report findings to the BCE and Medical Group Commander. BE will coordinate with CE and JA to determine whether primacy agency notification is necessary. Note: substantive interactions with federal, state or local compliance offices should be coordinated with the Installation DW Working Group. For detailed information on water storage processes and associated health outcomes, refer to the DW Surveillance Technical Guide.

2.6. Bottled Water Survey.

2.6.1. BE personnel shall conduct bottled water storage surveys that provide subject matter expertise regarding health outcomes associated with existing, new or proposed bottled water storage processes. Surveys will be documented in the DOEHRS Bottled Water Storage survey(s) as appropriate.

2.6.2. BE shall adjust surveillance plans when necessary to account for potential storage processes affecting the water system that could result in changes to water quality and potability. BE will assess health risks of any significant changes in water quality as a result of bottled water storage and shall report findings to Medical Group Commander and Force Support Squadron. For detailed information on storage processes and associated health outcomes, refer to the DW Surveillance Technical Guide.

2.6.3. Bottled DW obtained from a supplier must be approved by the U.S. Army Veterinary Command or veterinary services personnel assigned to operational commands. A list of approved bottled water suppliers in the US and its territories and overseas is available at the Army Veterinary Command website: <http://vets.amedd.army.mil/vetsvcs/approved.nsf>. When no supplier information is available, BE or Public Health (PH) may approve bottled water sources. Locally approved bottled water suppliers should be added to the locally approved source list maintained by PH IAW AFI 48-116, *Food Safety Program*, Sections 1.3.1.2 and 1.7.25. Purchase of bottled DW is authorized only as per AFI 65-601 V1, *Budget*

Guidance and Procedures. PH surveillance may be used to meet BE requirements if agreed to in writing by the two agencies. Bottled water should be stored IAW the DW Surveillance Technical Guide.

Chapter 3

OTHER PROGRAM ELEMENTS

3.1. Surveillance.

3.1.1. Overview. BE conducts surveillance IAW all MAJCOM, Combatant Command, Joint Service, AF, federal and local primacy agency guidance, and DoD OEBGD/FGS regulations as applicable.

3.1.2. Disinfectant Surveillance. Water production personnel will ensure that adequate disinfectant residual monitoring is performed, both at the point of production, and at various points in the distribution system. Treated water shall be tested by CE prior to entry into the distribution system at least daily; however, if the character and variability of the water supply so dictates, test more often and at several locations. BE should test at various points in the distribution system during routine DW surveillance or during other investigations (i.e. disinfection byproducts, trihalomethanes, haloacetic acids, etc...) as appropriate. For instructions on testing for specific analytes and water quality measures, refer to the DW Surveillance Technical Guide and applicable state/local requirements.

3.1.3. Emergency Disinfection. CE and BE personnel will follow applicable regulations for emergency disinfection of water lines, water storage tanks and water treatment facilities. If no primacy agency regulations exist, CE and BE will follow industry standards for disinfection (e.g., American Water Works Association). For additional emergency disinfection guidance, refer to the DW Surveillance Technical Guide and applicable state/local requirements.

3.1.4. Overseas installations will coordinate all requests for reduced monitoring under the FGS with the MAJCOM Surgeon prior to submission to the Executive Agent or equivalent authority.

3.1.5. Fluoridation. Fluoridation is an effective dental caries prevention measure. Installations that produce their own water in whole or part shall add fluoride when necessary to meet minimum fluoride levels to prevent dental caries. Fluoridation should be required where water is procured from other than Air Force water sources and costs benefits are justified. The DW Surveillance Technical Guide shows recommended fluoride levels, however, primacy agency requirements may take precedence over these recommendations. Overseas installations will fluoridate if applicable, but must comply with OEBGD/FGS policy on DW fluoridation. Fluoride shall not be added to systems where the DoD public water system served population does not include children age 10 and under. For specific instructions on fluoridation of AF water systems, refer to the DW Surveillance Technical Guide.

3.1.5.1. Fluoridation Surveillance: When fluoride is added to DW, water treatment personnel must monitor product water at frequencies and locations as determined by the agency with primacy. BE will also perform sampling for fluoride in the distribution system at one or more points in the distribution system. The frequency of fluoride testing should be based on past history of fluoride application at the treatment plant, reliability of the fluoride feeder system, and past history of fluoride sampling performed by BE. The method used to determine fluoride levels must be a method approved by the primacy

agency. For consistency, BE and CE should use the same analytical method. These fluoride analyses are performed by BE and not reported to state regulatory authority, where the state does not have certified laboratory analysis requirements. Comply with applicable fluoride analysis and reporting where required. Periodic fluoridation analysis reports will be sent to the Chief of Dental Services (CDS) and CE.

3.1.5.2. During initial operation of a new fluoride feeding system, BE shall test fluoride concentrations at one or more points in the distribution system each day and have a comparative weekly sample sent to an approved third-party laboratory for verification. BE will follow this procedure for at least two months, or until results indicate that the system is operating reliably. Initially, verification should also be completed by mass balance calculations, as explained in the DW Surveillance Technical Guide.

3.2. Air Force-Unique Surveillance.

3.2.1. Overview. At installations outside the United States and its territories, i.e. overseas, AF-unique criteria listed in this instruction and not included in the OEBGD or applicable FGS should be followed when feasible.

3.2.2. Aircraft Watering Points. Military aircraft are not considered carriers which convey passengers in interstate commerce; therefore, the Aircraft Drinking Water Rule in 40 CFR 141 does not apply; however, a safe, potable water supply will be supplied to personnel on military aircraft per AF requirements. The DW Surveillance Technical Guide provides guidance on conducting surveillance of aircraft watering points.

3.2.3. Child Development Centers (CDC), School Age Programs (SAP), Department of Defense Dependent Schools (DODDS), and Domestic Dependent Elementary and Secondary Schools (DDESS).

3.2.3.1. BE will collect or arrange for collection of a monthly DW sample for bacteriological analysis from each CDC, SAP, DODDS and DDESS it supports. BE may or may not include this sample as part of its compliance sampling requirements. Exclusion of these samples from compliance requirements must be coordinated with the primacy agency for approval.

3.2.3.2. The director of the CDC, SAP, DODDS, DDESS will coordinate with BE prior to opening a new facility and when plumbing lines or fixtures are modified, added or replaced. Only lead-free materials (solder, flux and fixtures that contain no more than 0.2 percent lead) will be used in the installation or repair of DW distribution systems. BE will ensure initial sampling is performed using the Lead Contamination Control Act (LCCA) protocols when fixtures or treatment processes are modified in any way that may increase lead concentrations.

3.2.3.3. BE must investigate any source of lead, identify appropriate corrective actions (e.g. temporary flushing for new components or component replacement), and provide all necessary follow up surveillance whenever results exceed 20 parts per billion (ppb).

3.2.3.4. CDC and SAP directors, DODDS and DDESS officials will ensure that analytical results for DW lead concentrations from sampling performed under the LCCA are on file in the CDC, SAP, DODDS, and DDESS administrative office, respectively. Any corrective actions identified to mitigate sources of lead contamination must be

accomplished or the facility closed or bottled water provided until corrective actions are accomplished.

3.2.3.5. BE will provide sampling results specific to the CDC, SAP, DODDS or DDESS at the request of the respective CDC, SAP, DODDS or DDESS official. Program directors or DODDS/DDESS officials will also maintain a copy of the most current Consumer Confidence Report in the respective CDC, SAP, DODDS and DDESS administrative office. BE will refer to the DW Surveillance Technical Guide for detailed information on lead issues.

3.2.4. Lead and Copper Rule sampling will be done IAW 40 CFR 141.86 and any additional primacy agency or FGS requirements. In addition, overseas installations will:

3.2.4.1. Either monitor for or ensure monitoring is performed for Lead and Copper Rule compliance in leased and owned housing and other leased facilities regardless of water system ownership.

3.2.4.2. Ensure initial sampling for Lead and Copper Rule compliance is performed when changes in the water source or water treatment can potentially result in increased lead or copper concentrations.

3.3. Cross-Connection and Backflow Prevention Program.

3.3.1. A program to identify, isolate, record, and correct cross-connections and other potential sources of distribution system contamination will be conducted IAW AFI 32-1066, *Backflow Prevention Program*. CE will maintain the inventory of cross-connections and backflow prevention devices. At least every year, the BEE will review the inventory and update or assign health hazard classifications for cross-connections using guidance established in the latest edition of the Uniform Plumbing Code.

3.3.2. During construction design reviews, the BEE will assist the base backflow prevention program manager in recommending appropriate backflow prevention devices where equipment plumbed to potable water supplies is being installed. Refer to the DW Surveillance Technical Guide and applicable state/local requirements for specific cross-connection and backflow prevention information.

3.4. Flushing.

3.4.1. CE will accomplish unidirectional flushing and flushing that addresses dead-ends IAW Unified Facilities Criteria (UFC) 3-230-02, *Operation and Maintenance: Water Supply Systems*. CE should coordinate with BE on the installation distribution system flushing program to ensure health concerns identified by BE are addressed.

3.4.2. BE recommendations should be supported with sample analysis results and findings from the DW distribution surveys recorded in DOEHS and the water vulnerability assessment.

Chapter 4

SAMPLING, ANALYSIS, AND MONITORING (SAM) PLAN

4.1. SAM Plan Elements.

4.1.1. BE, in coordination with CE, shall create and annually update a SAM Plan to include the following elements:

4.1.1.1. Identification of all DW sampling sites used to protect the health of the population served and ensure compliance with the appropriate guidance and regulations. BE will maintain certification documents from the certified laboratory on these sampling sites where appropriate (e.g., lead and copper sampling sites and bacteriological sites).

4.1.1.2. Annual and long-range sampling schedule.

4.1.1.3. The primacy agency will approve the description and classification (e.g., community/non-community, transient/non-transient) of each Public Water System (PWS). Typically, BE responsibilities for PWS shall include recreational areas (swimming pools) and geographically separated units supported by the parent Wing or Medical Group. These responsibilities will be agreed upon at the local level via memorandum of agreement (MOA) or memorandum of understanding (MOU) or Host-Tenant Support Agreements (HTSA).

4.1.2. Identification of support laboratory for each contaminant and a confirmation annually that the laboratory holds the appropriate certification for the analyte(s) in question. Include procedures to verify the laboratory is using the appropriate QA/QC, achieving the prescribed detection limits, and reporting results IAW applicable regulatory requirements. Since USAFSAM maintains a current list of EPA/State certified laboratories, consultation with USAFSAM is highly encouraged during this identification process.

4.1.3. Locally developed procedures for conducting the DW surveillance program. These procedures should include a schedule for routine monitoring, monitoring of aircraft watering points, increased monitoring during contingencies or heightened Force Protection Condition, repeat and investigative sampling when installation violates a SDWA standard, and monitoring performed before placing new connections and repaired water mains or storage tanks into use.

4.1.4. A current map of each water distribution system showing the locations of bacteriological, chemical, lead and copper, and radiological monitoring points. If available, BE should request CE include this information as part of a Geographical Information System and track locations of water system maintenance and complaint reports.

4.2. Quality Assurance/Quality Control (QA/QC) Program. Each BE unit shall implement a program for ensuring quality DW data. This includes but is not limited to recording periodic equipment calibration data, ensuring personnel training is relevant and current, incorporating proper sample collection techniques, and controlling chain-of-custody discipline to preserve samples as necessary. For detailed instructions on building an effective QA/QC program, refer to the DW Surveillance Technical Guide.

4.3. Variances and Exemptions. All current and expired variances and exemptions are approved by the agency with primacy. A copy of any granted exemptions or variances involving SAM will also be provided to the MAJCOM Civil Engineer and AFMSA.

4.4. Enforcement Actions. The installation ESOH Council should approve procedures to address notices of violations or other enforcement actions that will meet applicable federal, state and local regulatory requirements. The DW Surveillance Technical Guide provides basic guidelines for developing local notification procedures.

Chapter 5

PRIVATIZED PUBLIC WATER SYSTEMS

5.1. Privatized Public Water Systems. The AF is increasingly transitioning operations & maintenance of DW service to private entities. The roles and responsibilities of this transition should be coordinated at the local level with the privatized utility provider, installation and primacy agency. AFCEE and AFCESA can provide assistance to installations as they develop privatization projects. BEEs stationed at installations with privatized water systems will ensure that the members of their flight develop and maintain the skill set necessary to deliver BE capabilities. This will be accomplished with a combination of training and other hands-on opportunities designed to make BE personnel competent at approving DW systems and sources.

Chapter 6

RECORD KEEPING AND REPORTING

6.1. Consumer Confidence Reports (CCR). AF owned or operated PWS that are regulated as CWS are required to annually issue a CCR NLT 1 July. BE will develop the CCR IAW guidance from the primacy agency or the DW Surveillance Technical Guide if no primacy agency guidance exists. AF installations, including those with privatized DW systems that receive a CCR from a local water supplier will provide either the original or modified CCR to the base population, if not already providing their own CCR. If the original CCR is modified for distribution, ensure that modifications do not eliminate regulatory required content.

6.2. Overseas Installations. Overseas installations with PWSs that serve at least 15 service connections used by year-round residents, or regularly serve at least 25 year-round residents, will provide a water quality report through appropriate means to inform base customers by 1 July annually. These water quality reports may be modeled after the CCR, and will follow a MAJCOM Bioenvironmental Engineer approved format.

CHARLES B. GREEN, Lt Gen, USAF,
MC, CFS
Surgeon General

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

40 CFR Parts 141, 142 and 143, National Primary Drinking Water Regulations
56 FR 26460 – 26564, Lead and Copper Rule
AFI 10-246, “Food and Water Protection Program”, 4 December 2004
AFI 32-1066, “Backflow Prevention Program”, 17 October 2007
AFI 32-1067, “Water Systems”, 25 March 1994
AFI 32-7041, “Water Quality Compliance”, 10 December 2003
AFI 48-116, Food Safety Program, 22 March 2004
AFI 65-601, Volume 1, “Budget Guidance and Procedures”, 3 March 2005
AFI 90-801, ESOH Councils, 25 Mar 2005, Certified Current 29 Dec 09
AFPD 90-8, Environment, Safety, and Occupation Health, 1 Sep 2004
DoD Instruction 4715.5, “Management of Environmental Compliance at Overseas Installations”
DoD Model Wellhead Protection Plan
Standard Methods for the Examination of Water and Wastewater, American Public Health Association, most current edition
Uniform Plumbing Code Illustrated Training Manual, most current edition
UFC 3-230-02, Operations & Maintenance of Water Supply Systems
UFC 3-230-07A, Water Supply: Sources and General Considerations, 16 January 2004
UFC 3-230-19N, Water Supply Systems
USAFSAM DW Surveillance Technical Guide
Safe Drinking Water Act Hotline 1-800-426-4791
American Water Works Association (AWWA) 1-303-794-7711/1-800-926-7337

Abbreviations and Acronyms

AF—United States Air Force
AFCEE—Air Force Center for Engineering and the Environment
AFCESA—Air Force Civil Engineering Support Agency
AFI—Air Force Instruction
AFMSA—Air Force Medical Support Agency
AWWA—American Water Works Association
BCE—Base Civil Engineer

BE—Bioenvironmental Engineering
BEE—Bioenvironmental Engineer
CBRN—Chemical, Biological, Radiological and Nuclear
CCR—Consumer Confidence Report
CDC—Child Development Center
CDS—Chief of Dental Services
CE—Civil Engineering
CEO—Civil Engineering Operations
CFR—Code of Federal Regulations
CWS—Community Water System
DOD—Department of Defense
DODI—Department of Defense Instruction
DODDS—Department of Defense Dependant Schools
DOEHRS—Defense Occupational and Environmental Health Readiness System
EPA—Environmental Protection Agency
FDA—Food and Drug Administration
FGS—Final Governing Standard
FMP—Family Member Programs
HTSA—Host-Tenant Support Agreement
IAW—In Accordance With
LCCA—Lead Contamination Control Act
MAJCOM—Major Command
MCL—Maximum Contaminant Level
MOA—Memorandum of Agreement
MOU—Memorandum of Understanding
NBC—Nuclear, Biological, and Chemical
NLT—No Later Than
NPDWR—National Primary Drinking Water Regulations
NTNCWS—Non-Transient Non-Community Water System
OEBGD—Overseas Environmental Baseline Guidance Document
O&M—Operations and Maintenance
PWS—Public Water System

QA/QC—Quality Assurance/Quality Control

REO—Regional Environmental Office

SAM—Sampling, Analysis and Monitoring

SAP—School Age Program

SDWA—Safe Drinking Water Act

TB MED—Technical Bulletin Medical

TNCWS—Transient Non-Community Water System

USAFSAM—United States Air Force School of Aerospace Medicine

WVA—Water Vulnerability Assessment